

1. (Currently amended) A system for acquiring, processing and displaying image data of a patient's breast comprising:

a breast immobilizing device;

an x-ray source for producing a beam of x-rays, the x-ray source selectively rotating about a selected pivot axis, said beam for irradiating a patient's breast positioned in said immobilizing device, said irradiating being along a multiplicity of different directions of the beam relative to the breast and taking place while the breast remains immobilized;

an imager for detecting x-rays within the beam that have passed through the patient's breast to generate x-ray image data describing a multiplicity of initial x-ray images related to said multiplicity of directions along which the x-ray beam irradiates the breast; [[and]]

an ultrasound system for acquiring pre-scan ultrasound image data of the breast[[,]]; and

a processor coupled to the x-ray source and the ultrasound system to receive the pre-scan ultrasound image data from the ultrasound system and control, wherein at least one of an x-ray source exposure parameter or an x-ray source position is controllable in response to the pre-scan ultrasound image data.

Claims 2-28 (cancelled).

29. (Previously presented) A system as in claim 1 in which the ultrasound system includes at least one ultrasound transducer that both emits and receives ultrasound signals and is at one side of the breast.

30. (Previously presented) A system as in claim 1 in which the ultrasound system includes at least two ultrasound transducers that are at opposite sides of the breast.

31. (Previously presented) A system as in claim 1 in which said pivot axis is at a focal spot from which the x-ray beam emanates.

32. (Previously presented) A system as in claim 1 further comprising a processing system for processing the x-ray image data and the ultrasound image data and producing at least one processed x-ray image of the breast suitable for display and at least one processed ultrasound image suitable for display in which said processed x-ray image is a projection image.

33. (Previously presented) A system as in claim 32 further comprising a display system for concurrently displaying the processed x-ray image and the processed ultrasound image in which the concurrently displayed processed x-ray and ultrasound images are at different orientations relative to the breast.

34. (Previously presented) The system as in claim 1 wherein the image detector and ultrasound system are located in the same housing.

35. (Previously presented) The system as in claim 1 wherein the image detector and ultrasound system are selectively connectable.

36. (Currently amended) A system for acquiring x-ray and ultrasound image data of a patient's breast comprising:

an x-ray imaging system including a rotating x-ray source and a detector positioned to receive x-rays from the rotating source during an x-ray scan of the patient's breast;

an ultrasound system for acquiring pre-scan ultrasound image data from the breast, wherein at least one of an x-ray source exposure parameter or an x-ray source position is controllable in response to the pre-scan ultrasound data; [[and]]

a processor, coupled to the x-ray system and the ultrasound system, the processor to receive the pre-scan ultrasound data and control at least one of an x-ray source exposure in response to the pre-scan ultrasound data; and

a driving mechanism, coupled to both the x-ray imaging system and the ultrasound imaging system for controlling movement of the x-ray imaging system and the ultrasound imaging system during x-ray image and ultrasound image acquisition.

37. (Previously presented) The system according to claim 36 wherein the x-ray scan follows the pre-scan.